



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FEB 18 2009

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jeffrey A. Leed
Leed Environmental, Inc.
Van Reed Office Plaza
2209 Quarry Drive, Suite C-35
Reading, PA 19609

Re: NL Industries, Inc. Superfund Site, Pedricktown, New Jersey
Comments on the September 2008 revised Focused Feasibility Study For Groundwater Remediation

Dear Mr. Leed:

The United States Environmental Protection Agency (EPA) has reviewed the Focused Feasibility Study for Groundwater Remediation, (FFS), dated September 2008, which was prepared by CSI Environmental, LLC. for the NL Industries, Inc. Superfund Site (the Site). The FFS describes the current groundwater conditions at the Site and evaluates five remedial alternatives for groundwater including no action, monitored natural attenuation, reagent injection, permeable reaction barriers and pump and treat.

EPA's comments are included with this letter as an attachment. Accordingly, when addressing these comments, please ensure that revisions are made to all sections to which the comments apply. Please update the FFS to address the comments in the attachment and resubmit the amended report to EPA within 21 calendar days of receipt of this letter. If you have further questions or concerns regarding EPA's comments on the Focused Feasibility Study for Groundwater Remediation or if you would like to schedule a conference to discuss the comments, please do not hesitate to contact Theresa Hwilka of my staff at 212-637-4409.

Sincerely yours,

Carole Petersen, Chief
New Jersey Remediation Branch

Enclosure

cc: Steve Maybury, NJDEP
S. Khan, US Army Core of Engineers

278175



Enclosure

COMMENTS ON THE FOCUSED FEASIBILITY STUDY FOR GROUNDWATER
(Revised September 2008)

NL INDUSTRIES, INC SUPERFUND SITE
PEDRICKTOWN, NEW JERSEY

1. *General:* The FFS contains numerous sentences which state that the only means by which cadmium would resolubilize would be “extreme unforeseen circumstances” or “catastrophic events” which would “grossly acidify the aquifer.” These statements are not accurate. According to the Eh/pH diagram for cadmium (*Monitored Natural Attenuation of Inorganics in Groundwater Vol. 2, Cadmium, p. 3*), cadmium is stable in its dissolved +2 phase at varying pHs depending on redox potential. Groundwater monitoring data from 2007 affirm this. Dissolved cadmium was found in samples with pHs as high as 5.22, which is background level at this site. Please amend the report accordingly.
2. *General:* Without any documentation to verify field sampling errors which would have affected the 2004 groundwater samples, the data should be considered valid and considered in all evaluations.
3. *General:* If the FFS references specific data from the GeoSyntec 1998 and 2000 Phase I and Phase II Technical Memoranda (Technical Memoranda) which is used to support conclusions/alternatives presented in the FFS, then the data should be included in the appendices.
4. *General:* The text states that completion of remedial activities for groundwater at the site will need to include a demonstration that RAOs have been met for all constituents listed in Table F from the 1994 ROD (Appendix A). The text should include language pertaining to the updated drinking water standards. Some standards have changed since the 1994 ROD. Accordingly, the newer standards must be met.
5. *General:* EPA considers MNA to be an active remedy; therefore, please remove any references in the FFS that state otherwise.
6. *Page 2, paragraph 1:* This section states that the goal of the FFS is to select a remedy. This section should briefly clarify that a ROD is already in place for groundwater; however, the remedy has not been implemented. The goal of this FFS is to evaluate the pump and treat remedy selected in the 1994 ROD and compare it to alternative remedies which are being developed to address the current site conditions.
7. *Page 3, last paragraph:* Please include the date for the OU2 ROD (September 1991).

Groundwater data reported in the Phase I and Phase II Technical Memoranda suggested that lead and cadmium were the primary contaminants of concern. Accordingly, it was determined that subsequent evaluations of lead and cadmium would be required for groundwater at the Site. While additional investigations focused on lead and cadmium, COCs listed in the 1994 ROD, including VOCs, continued to be monitored.

15. *Page 12, paragraph 1:* The first paragraph states that as pH levels in the central portion of the Site naturally increase to ambient levels, it is anticipated that lead and cadmium will be less soluble and undergo natural geochemical reactions including adsorption onto soil. Please include the pH values that are considered to be “ambient levels” at the site.
16. *Page 12, paragraph 4:* The fourth paragraph discusses the transfer of lead and cadmium from groundwater to aquifer materials. What is the stability of this adsorption mechanism in terms of Eh and pH?
17. *Page 14, 15, Section 1.2.5:* As stated in EPA’s previous comment letter (May 2008-Comment #4) and in comments above, EPA does not agree with the conclusions drawn in this section regarding risk pathways and off-site risk. Please replace the text in Section 1.2.5 with the following language.

A baseline risk assessment was conducted as part of the RI (O'Brien and Gere, 1990) and was based on COC concentrations from groundwater samples collected in 1989. The baseline risk assessment addressed the potential risks to human health by identifying potential exposure pathways by which the public may be exposed to contaminated groundwater (via ingestion). Groundwater exposures were assessed for both potential present and future land-use scenarios. Current land use was considered to be an industrial facility and future land use was characterized as either an industrial facility or residential area in the risk assessment. Current receptors included off-site residents (child and adult) and off-site workers. Future receptors included on-site residents (child and adult), off-site residents (child and adult), on-site workers and off-site workers. Results of the quantitative risk assessment concluded that there was an unacceptable risk for the potential future receptors due to exposure to contaminated groundwater via ingestion, with the exception of the on-site worker.

The unconfined aquifer at the site is classified as a Class II aquifer in the state of New Jersey. The designated use of Class II ground waters is to provide potable water and this is considered to be the most beneficial use for the aquifer. Accordingly, while the groundwater at the site is not currently being used for drinking water, the goal is to restore the aquifer to its most beneficial use.

A review of the current groundwater data suggests that the concentrations of cadmium and lead continue to exceed their respective New Jersey Department of Environmental Protection Groundwater Quality Criteria and Federal Maximum Contaminant Levels. These standards were promulgated to ensure that public water systems used as potable water sources remain protective of human health by limiting

26. *Page 31, paragraph 1, second to last sentence:* Delete the second to last sentence that begins with “In fact, envisioning.....occurrence.” Figures 3 and 4 from the *Groundwater Monitoring Report*, revised May 2008, showing the groundwater pH should be included in the FFS.
27. *Page 35, Section 3.4.1, 2nd paragraph:* Please revise the sentence that begins with “The injection of alkalinity provides pH management...” to clarify what is meant; i.e., a more alkaline environment will be created through addition of a basic compound to promote reactions between the native metals and the soil. Alkalinity is equal to the stoichiometric sum of bases in solution and is not something that can be injected.
28. *Page 37, Section 3.4.1, concluding sentence:* In the conclusion of the Bench Scale Treatability Study (BSTS), as conducted by WRT Services, Inc. (WRT) on behalf of CSI, it was assumed that lead and cadmium were incorporated into a crystal lattice structure, and were thereby made insoluble and immobile. WRT expressed the need to conduct further testing to evaluate this assumption because the tests they performed only measured the ability of different reagents to effectively produce a precipitate. The resulting precipitate had not been analyzed to confirm that the desired crystal lattice structure was achieved. This testing should be conducted to confirm the stability of the end product and to ensure that the end product is unlikely to be re-solubilized. Chemical equations explaining the mechanisms of the above reactions and phase diagrams should also be included as part of the description of the alternative.
29. *Page 38 & 39 – Potential Action Specific ARARs, NJ & Short Term Effectiveness:* How was the 10 year number calculated?
30. *Page 40, Feasibility to Implement:* Due to the heterogeneous nature of the soil, the radius of influence obtained by pouring the reagent from small containers into the well points will most likely not be sufficient to achieve remediation goals. This paragraph should be revised to indicate that additional evaluations will be conducted to determine the appropriate methodology for injecting the reagent into the groundwater in order to ensure that groundwater remediation goals are achieved.
31. *Table 10, Community Acceptance Row, Reagent Injection Column:* The table currently states that no institutional controls would be needed for reagent injection. This is incorrect. Institutional controls will need to be in place until the RAOs are achieved, as stated on page 41, paragraph 2. Please amend the table accordingly.

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Mr. Jeffrey Leed
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2209 Quarry Drive, Suite C-25
Reading, PA 19609

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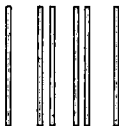
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